Special Attention of:

Regional Administrators-Regional Housing Commissioners; Directors, Offices of Regional Housing; Office Managers; Directors, Housing Development Divisions; Chiefs, Architectural, Engineering, and Cost Branches

Transmittal

Handbook No.: 4910.1 CHG 1

Issued: September 8, 1986

1. This Transmits

Change #1 to Handbook 4910.1, Minimum Property Standards for Multifamily Housing.

2. Explanation of Changes:

a. The cover has been retitled Minimum Property Standards for Housing to reflect the addition of care-type housing to the scope of the Handbook, and the rules for single family housing in the appendix.

b. The title page, Foreword, Introductory Statement and General Table of Contents have been changed to reflect the addition of care-type housing to the scope of the Handbook, and a reprint of the rules for single family dwellings in the appendix.

c. Chapter 1 has been completely changed to reflect the addition of care-type housing to the scope of the Handbook, and the substitution of Uniform Federal Accessibility Standards (UFAS) for those in the American National Standards Institute (ANSI) Standard A117.1-1980.

d. Section 607-1.2 has been changed to reflect the addition of care-type housing to the scope of the Handbook.

e. Appendix C has been changed to note where a list can be found, by publisher, of standards referenced in the Handbook, and to delete a standard for mat-formed wood particleboard as an exterior wall finish.

f. Appendix E has been changed to substitute the Uniform Federal Accessibility Standards (UFAS) for the American National Standards Institute (ANSI) Standard A117.1-1980.

g. Appendix I has been completely changed to reflect the addition of care-type housing to the rules for multifamily housing.

h. Appendix J has been changed to reflect the addition of care-type housing to the Handbook.

i. The rules for single family dwellings have been reprinted and added as Appendix K to facilitate their availability to those who use them as well as the Handbook for multifamily and care-type housing.

HSR : Distribution: W-3-1, R-3, R-6-1, R-7-1, R-8-1, R-9-1

j. The index has been completely changed to reflect the addition of care-type housing to the scope of the Handbook, and the reprint of the rules for one and two family dwellings in Appendix K.

3. Filing Instructions:

Remove:	Insert:
Existing Cover	Revised Cover
Existing Title Page	Revised Title Page
Existing Pages i, iii	Revised Pages i, iii
Existing Page 1-1	Revised Page 1-1
Existing Chapter 1 (6 Sheets)	Revised Chapter 1 (6 Sheets)
Existing Page 6-5	Revised Page 6-5
Existing Appendix C (2 Sheets)	Revised Appendix C (2 Sheets)
Existing Page E-1	Revised Page E-1
Existing Appendix I (7 Sheets)	Revised Appendix I (4 Sheets)
Existing Appendix J (1 Sheet)	Revised Appendix J (1 Sheet)
	New Appendix K (16 Sheets)
Existing Index (4 Sheets)	Revised Index (4 Sheets)

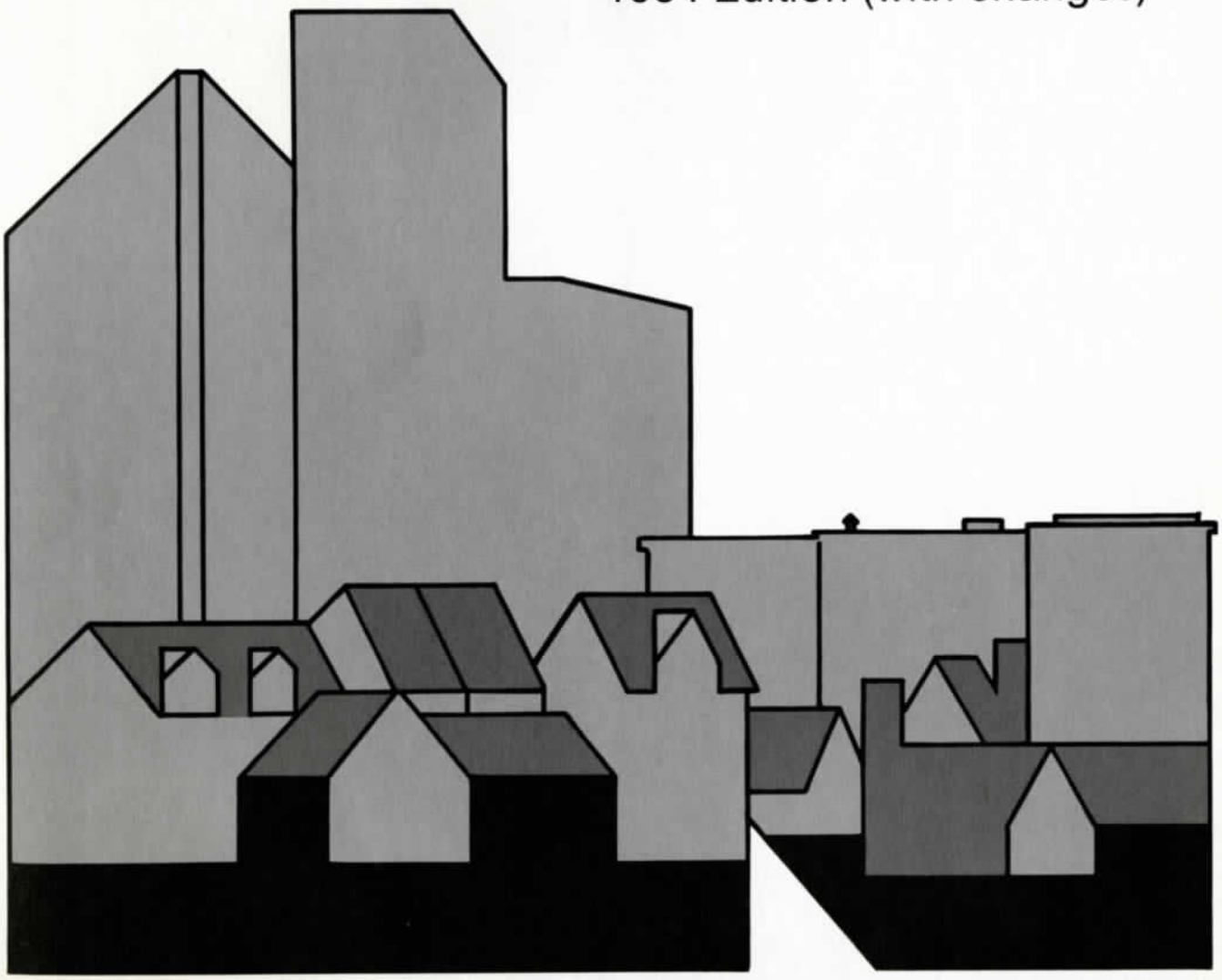
Silvio J. DeBartolomeis
General Deputy Assistant Secretary
for Housing - Deputy Federal Housing
Commissioner

U.S. Department of Housing and Urban Development
Office of Housing

4910.1

Minimum Property Standards for Housing

1984 Edition (with changes)



* MINIMUM PROPERTY STANDARDS FOR HOUSING

4910.1

U.S. DEPARTMENT OF HOUSING AND URBAN DEVELOPMENT
Office of Assistant Secretary for Housing -
Federal Housing Commissioner
Washington, D.C.

* 1984 Edition with Changes

* MF/C-86

FOREWORD

These Minimum Property Standards reference nationally recognized model building codes for concerns relating to health and safety. Locally adopted building codes can be used for the same purpose when they are found acceptable by the HUD Field Office.

These standards establish the acceptability of properties for mortgage insurance, and will further the goal of a decent and a suitable living environment for every American family. These standards will protect the Department's interest by requiring certain features of design and construction which are not normally required by state and local codes. These requirements will insure the durability of the project for the life of the mortgage.

* Silvio J. DeBartolomeis
* General Deputy Assistant Secretary
for Housing - Deputy Federal Housing
Commissioner

Introductory Statement

These Minimum Property Standards (MPS) are intended to provide a sound technical basis for the construction of housing under the numerous programs of the Department of
* Housing and Urban Development. MPS Handbook 4910.1 was
* originally published for multifamily housing with each page
* marked MF. The Handbook has now been revised to apply to
* care-type housing as well. Changes are noted with asterisks
* on pages marked MF/C plus the year of change. Chapters 1
* thru 6 and Appendices A thru J now apply to multifamily and
* care-type housing. Appendix K applies to one and two family
* dwellings. The standards describe those characteristics in a property which will provide present and continuing utility, durability, and economy of maintenance.

These MPS for Housing (4910.1) are intended to be used in all jurisdictions. In areas where the Department has found the local code acceptable, these MPS are to be used in conjunction with the local code. In areas where the Department has not accepted the local building code, these MPS are to be used in conjunction with a nationally recognized model building code designated by the Department.

Finally, in areas where the Department has partially accepted a local building code, the MPS are to be used in conjunction with the local building code, plus those portions of a nationally recognized model code designated by the Department.

The requirements contained in this handbook and in the indicated codes define the minimum level of quality acceptable to HUD. Other factors and considerations affect the level of quality of the property. The level of quality will be considered by the Department during the valuation process. Procedures for evaluation of design considerations, project eligibility and valuation analysis are set forth in HUD program handbooks and other applicable Federal and local regulations and standards.

Environmental quality is also a relevant consideration. As a general policy, development of all properties must be consistent with the national program for conservation of energy and other natural resources, and care must be exercised to avoid air, water, land and noise pollution and other hazards to the environment. Orderly and efficient development responsive to residential needs, preservation of good existing natural surroundings, conservation of fossil fuels, and careful consideration of environmental factors are essential for the furtherance of this policy.

GENERAL TABLE OF CONTENTS

* Page numbers of the MPS indicate the chapter first and the
* page within the chapter second. Appendices are similarly numbered. Asterisks * denote changes and the year made.

TABLE OF CONTENTS

C H A P T E R 1

GENERAL USE

100 APPLICATION

100-1 PROPOSED CONSTRUCTION

100-1.1 General

These Minimum Property Standards apply to buildings and sites designed and used for normal
* multifamily and care-type occupancy, including both unsubsidized and subsidized insured housing. The requirement of compliance with these standards under specific programs administered by the Department is prescribed in program regulations promulgated by the Department. Generally, these standards regulate the nature and quality of the property within its property lines. However, some standards require certain off-site conditions. See, for example, §204-1, which requires street access to the property.

100-1.2 Housing for the Elderly

* This Section includes Uniform Federal Accessibility
* Standards (UFAS) at 24 CFR Part 40 and variations,
* additions and exceptions to the MPS for the above
* types of housing, when housing is to be for the
* elderly.

* The number of accessible housing units which must
* be built will be determined on a project by project
* basis in accordance with the requirements of the
* program under which the project is to be built.
* Accessible housing units shall comply with UFAS.
* Projects with accessible units shall also meet all
* the facility accessibility requirements of UFAS.

a. Handrails

Handrails for exterior steps not attached to dwellings shall be provided in accordance with
* UFAS on both sides of a tenant stairway with a flight rise exceeding 24" and width exceeding 4 ft, and on one side when the width is 4 ft or less.

100-1.2 Housing for the Elderly - Continued

b. Walks

1. Covered walks shall connect residential buildings with any central dining rooms. The walks shall be enclosed where necessary to assure safety and comfortable use.

2. Walks designed for use by tenants shall have maximum gradients of five percent.

c. Community Social Rooms

Community social rooms are required in housing for the elderly.

d. Optional Project Facilities

Where the following facilities are provided, they shall comply with the following:

(1) Occupational or Physical Therapy - Space shall be provided for services and for storage of equipment.

(2) Dietitian's Office - When a dietitian is to be employed, suitable office space convenient to the kitchen shall be provided.

(3) First Aid or Health Room - These facilities and any accompanying infirmary shall be designed for observation, minor treatment, or short term care of project residents. When these services are provided, facilities for an attending nurse are required.

(4) Nursing Facilities - These facilities for either short-term or long-term care for project residents shall be as follows:

(i) If nursing facilities are not provided at the time of construction, residential units may be specially designed for conversion to nursing facilities at a later date.

(ii) Facilities shall be grouped in a separate wing, floor or auxiliary building.

100-1.2 Housing for the Elderly - Continued

(iii) The nursing unit and patient rooms shall comply with requirements of
* UFAS.

(iv) The nursing portion of the project shall be clearly incidental to the purpose of providing housing, and the ratio of nursing beds to living units shall not exceed 1 to 4.

(5) Medical Facilities - Where a doctor's office with examination and treatment rooms is provided, it shall be designed to serve project residents. Spaces provided for rental to doctors, dentists, oculists, opticians, etc., shall be within the limits of allowable commercial space and located so as not to interfere with the residential space.

(6) Central Dining - Space shall be included to provide meals for occupants of living units which do not contain cooking and dining facilities.

(7) Central Kitchen Facilities - Such facilities are required where dining is provided. The kitchen shall be arranged and equipped for adequate and efficient food storage, preparation in proper sequence, serving, dish and utensil cleaning and storage, and refuse storage and removal. In projects consisting of 20 or more living units, the dishwashing activity shall be separated from that of food preparation. All cabinets and equipment provided shall be designed and installed to prevent contamination by insects, rodents, other vermin, splash, dust and overhead leakage.

(8) Central Bathing Facilities - Such facilities shall be located on the same floor and close to the living units served, i.e., those without bathing facilities.

100-1.2 Housing for the Elderly - Continued

When provided, a central bathroom shall contain:

(i) A tub or shower for each 15 or less persons to be served by the facility.

(ii) Space for dressing and space for the movement of wheelchairs.

(iii) Adequate lavatories and compartmented water closets. Enclosure of water closets is not required when the water closet is within a room used by only one bather. Designs in which a bather must enter the public corridor to reach a water closet are not acceptable.

(iv) Wheelchair Access. See 100-1.3.

e. Bedrooms

1. Beds shall be accessible from two sides and one end.

2. Combined living-sleeping space shall be of sufficient size to accommodate the living and sleeping functions as conveniently as separate living and sleeping areas.

f. Bathrooms

1. Bathtubs shall be at least 5 ft. long and shall be provided with at least two grab-bars.

* 2. A stall shower, when installed, shall have
* a seat and grab-bar, or shall be a roll-in shower complying with UFAS

3. Tub or shower bottom surfaces shall be slip resistant.

* 4. Grab bars and shower seats shall be
* installed to sustain a dead weight of 250 pounds for 5 minutes and comply with UFAS.

100-1.2 Housing for the Elderly - Continued

g. Halls and Corridors

1. Minimum clear widths of public halls and corridors shall be 5'-0".

* 2. Handrails complying with UFAS shall be provided on at least one side of all tenant corridors, except in living units.

h. Stairs

* The maximum riser height for stairs is 7".

Spiral Stairways and Winders are not permitted.

i. Elevators

* 1. Elevators complying with UFAS shall be provided in buildings of:

Three or more stories; or

Two stories if any living unit which does not have cooking and dining facilities is located on a floor level which does not have dining facilities.

2. At least one elevator car in each building shall be suitable for handling ambulance stretchers. It shall have a minimum capacity of 2500 lbs. and minimum size as required for service elevator under 614-1.

j. Emergency Lighting

Emergency lighting shall be provided for every public space, corridor, stairway, elevator and other means of egress. The lighting shall provide a minimum of 1 footcandle measured at the floor.

k. Flame Spread

The flame spread rating of walls and ceiling shall not exceed 75.

100-1.2 Housing for the Elderly - Continued

l. Wall Finishes

Abrasive wall finishes such as a sand finish shall not be used.

m. Floors

1. Floors shall be slip-resistant.

2. Adjacent dissimilar materials shall be flush with each other to provide an unbroken surface. Thresholds and Expansion Joint covers shall be flush with the floor.

n. Heat Loss Calculations

The inside design temperature shall not be less than 75 F in all habitable rooms and corridors when the outside temperature is at design level. Lower inside design temperatures may be used for storage rooms, work rooms, offices and other similar spaces.

o. Hot Water and Steam Heating Systems

Heating systems serving 10 or more living units shall be supplied by not less than two properly parallel connected boilers. The minimum net capacity of each boiler shall be 70% of the total connected load when two boilers are used and 35% when three boilers are used. When four or more boilers are used, the total capacity of all boilers shall not be less than the total connected load, and each boiler shall have the same net capacity. When the property contains nursing facilities, 1 1/2 beds shall be considered the equivalent of one living unit for purposes of this requirement.

p. Hot and cold water shall be supplied to all plumbing fixtures except water closets, urinals, bedpan washers, and drinking fountains, each of which will be supplied with cold water only.

100-1.2 Housing for the Elderly - Continued

q. Automatic temperature limit controls shall be provided so that hot water for showers will not exceed 110 F.

r. The quantity of hot water for personal use and the capacity of the domestic hot water heating equipment system shall be in compliance with the design criteria of ASHRAE Systems Handbook, 1980, Chapter "Service Water Heating."

s. Night Light

A convenience outlet for receiving a night light shall be provided approximately 2 ft above the floor between the bed location and the bathroom.

t. Emergency Call Systems

In projects containing 20 or more living units, each bathroom and one bed location in each living unit shall be furnished with one of the following emergency call systems: an emergency call system which registers a call (annunciator and alarm) at one or more central supervised locations, an intercommunicating telephone system connected to a switchboard which is monitored 24 hrs a day, or an emergency call system which sounds an alarm (not the fire alarm) in the immediate corridor and automatically actuates a visual signal in the corridor at the living unit entrance.

100-1.3 Requirements for Accessibility to Physically Handicapped People

This section applies to the new construction of
* projects under Federal financial assistance programs. It is recommended but not required that
* accessibility features in this section and UFAS be
* incorporated in non-assisted projects constructed
* under HUD insured mortgage programs.

The number of accessible housing units which must be built will be determined on a project by project basis in accordance with the requirements of the program under which the project is to be built.

The HUD Field Office will inform the project architect of the extent to which accessibility is required.

100-1.3 Requirements for Accessibility to Physically Handicapped People - Continued

a. Variation Procedures

Any request for a variation from the accessibility requirements for physically handicapped people must be accompanied by substantiating data and background information. Requests shall be submitted by the Field Office to the Secretary for decision.

b. Facilities Used in Common

Facilities used in common shall comply with UFAS.

c. Housing Units and Patient Rooms

Housing units and patients rooms required to be made accessible to and usable by physically handicapped persons shall comply with UFAS.

d. Elevators

Elevators complying with UFAS shall be provided in buildings of two or more stories in housing with living units above the first floor intended for occupancy by wheelchair users.

e. Emergency Exit Lighting

Emergency exit lighting which provides a minimum of 1 foot-candle measured from the floor, shall be provided for every public space, corridor, stairway, elevator and other means of egress.

f. Emergency Call Systems

Each living unit shall be furnished with one of the following emergency call systems: an emergency call system which registers a call (annunciator and alarm) at one or more central supervised locations, an intercommunicating telephone system connected to a switchboard which is monitored 24 hours a day or an emergency call system which sounds an alarm (not the fire alarm) in the immediate corridor and automatically actuates a visual signal in the corridor at the living unit entrance.

100-2 EXISTING CONSTRUCTION

Existing construction, including repairs, additions and partially completed construction shall comply with the objectives of this MPS as stated in the paragraphs titled GENERAL. (A listing of all applicable paragraphs of this nature is given below by format number.) Existing construction shall also comply with Chapter 2, General Acceptability Criteria. Work not started at the time of the request for HUD consideration shall conform to the specific standards when practicable.

100-1.1	305	600	615-3.1
300-1	306	602-2.1	
302-1	400-1	608-1	
303-1	500-1	615-2.1	

100-3 REHABILITATION CONSTRUCTION

Rehabilitation construction includes the following categories: (1) all repairs to or replacement of present elements of an existing building, such as windows, stairs, flooring, or wiring, (2) rearrangement of rooms by the relocation of partitions or by the installation of new bathrooms and kitchens; or (3) the general replacement of the interior of a building. This may or may not include changes to structural elements such as floor systems, columns or load bearing interior or exterior walls. Rehabilitation construction shall comply with the provisions of the program handbook for that particular program. New construction on cleared or vacant land or additions to an existing building which enlarge the floor area or height of the building shall meet the standards for new construction.

101 VARIATIONS TO STANDARDS

101-1 NEW MATERIALS AND TECHNOLOGIES

These standards are intended to encourage the use of new or innovative technologies, methods and materials. See Subchapter 613 of this handbook. Alternatives and non-conventional or innovative methods and materials shall be equivalent to these standards in the areas of quality, durability, economy of maintenance, operation and usability.

101-2 SPECIAL CONDITIONS

Certain conditions in the geographic area or on the site may justify modification of specific standards, or make compliance with the standards impracticable or impossible. In these cases, variations in accordance with procedures given in 101-3 may be permitted.

101-3 VARIATION PROCEDURES

101-3.1 Variations from the requirements of any standard with which the Department requires compliance shall be made in the following ways:

a. For a particular design or construction proposed to be used on a non-repetitive basis for a specific case or project, the decision is the responsibility of the Field Office. Headquarters concurrence is not required.

b. Where a variation is intended to be on a repetitive basis, a recommendation for a Local Acceptable Standard, substantiating data, and background information shall be submitted to the Field Office.

c. Requests for variations from the accessibility requirements for physically handicapped people shall be handled in accordance with the requirements of section 100-1.3a of this handbook.

101-3.2 Variations which require individual analysis and decision in each instance are not considered as repetitive variations even though one particular standard is repeatedly the subject of variation. Such variations are covered by the subject of Section 101-3.1a.

102 LOCAL CODES AND REGULATIONS

102-1 CODES AS STANDARDS

Acceptability of new construction for insurance or for utilization in other programs administered by the Department requires, among other things, compliance with minimum health and safety criteria.
* The Minimum Property Standards for Housing consist of the standards contained in and referenced by this
* handbook and the codes and standards with which
* compliance is required by 24 CFR 200.925. The
* relevant portions of 24 CFR 200.925 are reproduced in Appendix I of this handbook.

102-2 COMPLIANCE WITH CODES

The Department of Housing and Urban Development does not assume responsibility for enforcing or determining compliance with local codes and regulations or for making interpretations regarding their application for purposes of the local government. However, if compliance with the provisions of a local code is required in accordance
* with 24 CFR 200.925, then the Department is responsible for determining compliance and issuing interpretations for the Department's purposes.

103 REFERENCED STANDARDS

These standards must be used in conjunction with the information or requirements listed in Appendices A through I, which are incorporated herein by reference. Compliance with these standards and the requirements in the appendices does not obviate the need for compliance with any other applicable Federal, State or local requirements.

606-2 DECAY PROTECTION

606-2.1 Protection Against Damage by Decay

Where required by the HUD Field Office, protection against damage by decay shall be provided.

607 THERMAL AND MOISTURE PROTECTION

607-1 ENERGY REQUIREMENTS

607-1.1 Energy Efficiency

All buildings shall be constructed in compliance with the requirements of the CABO Model Energy Code, 1983 Edition except Sections 101.3.1, 101.3.2, 104, 105 and 502.1.2, but including the Appendix. The values to be used for the table contained in Section 302.1 of the Model Energy Code are to be those for the area in which the building is to be constructed. Information concerning heating and cooling degree days for particular locations shall be obtained from the ASHRAE Handbook of Fundamentals; the ASHRAE Heating Cooling Load Calculation Manual; the NAHB-RF Insulation Manual for Homes and Apartments; local utilities; or the National Climatic Data Center Manuals are available from NAHB-RF, or MIMA.

Other sources of heating degree day and summer cooling data may be used, if acceptable to the HUD Field Office.

607-1.2 Thermal Mass

* In addition to the energy criteria set forth in Section 607-1.1, the design of a property may take into consideration the thermal mass of building components. However, thermal mass may be considered only to the extent that the developer or other interested party can provide the HUD Field Office with empirical evidence that quantifies the effect of thermal mass with respect to the specific geographical location in question and with respect to the specific type of construction in question. When the quantifiable effects

607-1.2 Continued

of thermal mass are considered, the building must provide a level of energy efficiency equal to or exceeding that otherwise required by these MPS.

607-2 FLASHING

General

a. Flashing shall have a service life at least equal to that of the assemblies into which it is built.

b. Alternate products or systems of bitumen-impregnated plastic or elastomeric materials may be used for flashing if they are installed in accordance with the manufacturer's recommendations and are acceptable to the HUD Field Office. Counter flashing is considered exposed flashing and shall be constructed of sheet metal.

c. All openings between wood or metal and masonry shall be caulked with a non-hardening caulking compound.

607-3 GUTTERS AND DOWNSPOUTS

607-3.1 Gutters

a. Gutters shall be provided when either of the following conditions are present:

(1) Soil is of such a nature that excessive erosion or expansion will occur or,

(2) Roof overhangs are less than 12 inches in width for one story structures or less than 24 inches in width for two story structures.

b. When gutters are omitted, a diverter or other suitable means shall be provided to prevent water from roofs or valleys from draining on uncovered entrance platforms or steps.

A P P E N D I X C

MATERIAL STANDARDS

Materials listed in Appendix C are a partial listing of materials considered to meet the minimum requirements of the MPS. The list of approved incorporations by reference is
* published in the Code of Federal Regulations at 24 CFR
* Part 200 Appendix A.

507 THERMAL AND MOISTURE PROTECTION

507-3 BUILDING INSULATION

Cork Board	FS HH-I-525A
Cellular Glass	FS HH-I-551E
Cellulosic, Vegetable or Wood Fiber	FS HH-I-515D
Expanded Polystyrene Insulation Board	FS HH-I-524C
Fiberboard	FS LLL-I-535B Class C or E or ASTM C 209-72
Insulation Board (Urethane)	FS HH-I-530B
Insulation Board, Thermal (Mineral Aggregate)	FS HH-I-529B or ASTM C 726-81
Insulation Board, Thermal, Faced, Polyurethane or Polyisocyanurate	FS HH-I-1972/GEN; 1; 2; 3; 4; 5 & 6
Mineral Fiber, Board (Roof)	FS HH-I-526C
Mineral Fiber, Insulation Blanket	FS HH-I-521F
Mineral Fiber, Pneumatic or Poured	FS HH-I-1030B
Perimeter Insulation	FS HH-I-524C FS HH-I-558B Form A Class 1 or 2
Reflective, Thermal	FS HH-I-1252B
Cellulosic Fiber Insulating Board	PS 57-73
Application of Structural Insulating Board (Fiberboard) Sheathing	ASTM C 846-76
Perlite	FS HH-I-574B or ASTM C 549-81
Vermiculite (used as masonry wall filler)	FS HH-I-585C Class 2
(for other uses)	ASTM C 516-80
Spray Applied Cellulosic Thermal Insulation	UM 80-79

507-6 CAULKING AND SEALANTS

Elastomeric Type; Multi-Compound	FS TT-S-227B
Elastomeric Type; Single-Compound	FS TT-S-230A
Oil and Resin Base Type	FS TT-C-598B
Silicone Rubber Base	FS TT-S-001543A

507-6 CAULKING AND SEALANTS - Continued

Butyl Rubber Base; Single-Compound------FS TT-S-001657A
Latex Sealing Compounds----------ASTM C 834-76 (1981)
Voluntary Specifications for Ductile
Back-Bedding Glazing Tapes----------AAMA 804.1-76
Voluntary Specification for Oil-Extended Cured
Rubber Back-Bedding Glazing Tapes-------AAMA 807.1-76
Voluntary Specifications for Non-Drying
Sealants for Use with Architectural
Aluminum----------AAMA 809.2-76
Celluar Neoprene----------ASTM C 509-79
Specifications for Dense Rubber-like
Compression Gasket Materials----------AAMA SG-1-76

508 DOORS, WINDOWS, GLAZING PANELS

Metal Doors and Frames

Interior Steel Doors and Frames (flush)-------PS 4-66
1 3/4 in. thick Steel Doors and Frames------CS 242-62
Aluminum Storm Doors----------ANSI/AAMA 1102.7-77

Wood Doors and Frames

Hardwood, Hardboard and Plastic Faced Flush
Doors----------ANSI/NWMA IS 1-80
Interior Prehung Wood Door Units----------NSDJA 1-79
Ponderosa Pine Doors----------ANSI/NWMA IS 5-73
Douglas Fir, Sitka Spruce and Western Hemlock
Doors----------FHDA 7-79
Wood Storm Doors----------ANSI/NWMA IS 5-73
Exterior Wood Door Frames----------WM 3-79

Special Doors

Aluminum Sliding Glass Doors-------ANSI/AAMA 402.9-77
Wood Sliding Patio Doors----------ANSI/NWMA IS 3-70

Metal Windows and Frames

Aluminum Prime Windows----------ANSI/AAMA 302.9-77
Aluminum Insulating Storm
Products----------ANSI/AAMA 1002.10-83
Condensation Resistance of
Windows, Doors and Glazed
Wall Sections----------AAMA 1502.7-81
Thermal Transmittance of Windows,
Doors and Glazed Wall Sections-------AAMA 1503.1-80
Thermal Performance of Residential
Windows and Sliding Glass Doors--------AAMA 1504-83
Voluntary Standards and Tests
of Thermal Performance of
Residential Insulating Windows
and Sliding Glass Doors----------AAMA 1502.6-77

Wood Windows and Frames
Wood Window Units----------ANSI/NWMA IS 2-80
Hardware
Lockset----------ANSI A156.2-76
Insect Wire Screenings----------CS 138-55
Screening, Insect, Non-metallic----------FS L-S-125B
Insect Screening and Louver Cloth
Woven from Vinyl-Coated Glass
Fiber Yarn----------ANSI/ASTM D 3656-78

Glass and Other Glazing Panels

Acrylic Plastic Sheets for Glazing--------- UM 58a-75
Glass----------FS DD-G-451D

Safety Standard for Architectural
Glazing Materials----------CPSC 16 CFR Part 1201
Safety Glazing Material
Used in Buildings----------SGCC Certified Products Directory
Tempered Glass----------FS-DD-G-1403B

509 FINISH MATERIALS

509-1 EXTERIOR WALL FINISHES
Aluminum----------AAMA 1402.3-82
Asbestos-cement----------FS SS-S-346C
ASTM C 220-77
ASTM C 221-81
ASTM C 223-78
Fiberboard Shingle Backer----------ASTM C 208-72 (1982) Class G
Basic Hardboard----------ANSI/AHA A135.4-82
Hardboard Siding---------- PS 60-73
*
Plywood----------PS 1-83
Rigid PVC (polyvinyl chloride)----------ASTM D 3679-81a
Textured Plywood Panel Siding----------UM 64b-75
Stucco (exterior plaster)----------ASTM C 926-81

509-2 FINISH FLOORING-RIGID
Ceramic Tile----------ANSI A137.1-80
Specification for Installation
of Ceramic Tile----------ANSI A108.1-76

Terrazzo----------NTMA Specifications, Details and Technical Data - 1981

Wood
Block, Slat----------PS 27-70
Laminated Hardwood Flooring----------ANSI/HPMA LHF-82
Strip Oak Flooring----------NOFMA-OFGR/ Vol. 1, No. 1-77

509-3 RESILIENT FLOORING
Asphalt Tile (Type I) - Vinyl Tile (Type III) - Rubber Tile (Type II) - Vinyl-asbestos Tile (Type IV)----------FS SS-T-312B
Linoleum----------FS LLL-F-1238A
Rotovinyls (Unfilled Vinyl Sheet)------FS L-F-001641-71
Backed Vinyl Plastic Sheet or Tile (Grade C)----------FS L-F-475A
Homogeneous Vinyl Sheet----------FS L-F-00450A
Underlayment
Basic Hardboard----------ANSI/AHA A135.4-82
Particleboard (Grade 1-M-1)----------ANSI A 208.1-79 ASTM D 1037-78
Plywood----------PS 1-83

511 EQUIPMENT
Minimum Construction Performance Standards for Kitchen Cabinets--------ANSI A 161.1-80

515 MECHANICAL

515-7 SPECIAL PIPING SYSTEMS
Gas Piping----------NFPA 54-80 & 58-79

515-8 WATER SUPPLY SYSTEM
Water Softeners----------WQA S 100-75
Water Filters----------WQA S 200-73
Community Water Systems
Minimum Design Standards for Community Water Supply Systems----------HUD Handbook 4940.2-8/73

515-9 SEWAGE DISPOSAL SYSTEM
Community Sewage Systems
Minimum Design Standards for Community Sewerage Systems----------HUD Handbook 4940.3-11/72

A P P E N D I X E

ACCEPTED ENGINEERING PRACTICE STANDARDS

Design and construction completed in accordance with the applicable standards, guides and recommendations contained in this Appendix shall be considered to satisfy the requirements of the MPS, unless stated otherwise. The list of approved incorporations by reference is published in the
* Code of Federal Regulations at 24 CFR Part 200 Appendix A.

100-1 HANDICAPPED PERSONS

* Uniform Federal Accessibility Standards (UFAS)-------
* ----------GSA,DOD,HUD and USPS 24 CFR Part 40

600 GENERAL

Intermediate Minimum Property Standards Supplement - Solar Heating and Domestic Hot Water Systems----------HUD Handbook 4930.2-3/77

602 SITE

Thickness Design - Full Depth Asphalt Pavement Structures for Highways and Streets - Asphalt Institute ----------MS-1-1976
Installing Vitrified Clay Sewer Pipe ---------- ASTM C 12-81
Test for Moisture - Density Relation of Soil---------- ASTM D 1557-78
Installing Bituminized Fiber Drain & Sewer Pipe ---------- ASTM D 2316-75 (1980)
Floodplain Management ---------- EO 11988
Protection of Wetlands ---------- EO 11990

603 CONCRETE

Recommended Practice for Selecting Proportions for Concrete----------ACI 211.1-81
Recommended Practice for Selecting Proportions for Structural Lightweight Concrete----------ACI 211.2-81
Guide for Structural Lightweight Concrete----------ACI 213R-79
Recommended Practice for Evaluation of Compression Test Results of Field Concrete----------ACI 214-77
Specifications for Structural Concrete for Buildings----------ACI 301-72 (Rev. 81)

CONCRETE - Continued

Design and Construction of Post-tensioned Slabs-on-Ground----------PTI-1980
Criteria for Selection and Design of Residential Slabs-on-Ground, Report #33, Publication 1571----------NAS-1968
Guide for Concrete Floor and Slab Construction----------ACI-302.1R-80
Guide to Joint Sealants for Concrete Structures----------ACI 504R-77
Guide for Concrete Inspection----------ACI 311.4R-80
Details and Detailing of Concrete Reinforcement----------ACI 315R-80
Building Code Requirements for Reinforced Concrete----------ACI 318-77
Structural Plain Concrete----------ACI 322-72
Recommended Practice for Concrete Formwork----------ACI 347-78
Recommended Practice for Shotcreting----------ACI 506-66 (1978)
Recommended Practice for the Application of Paint to Concrete Surfaces----------ACI 515R-79
Fabrication, Handling and Erection of Precast Concrete Wall Panels ----------ACI 533.3R-70
Quality Standards and Tests for Precast Concrete Wall Panels----------ACI 533.1R-69
Selection and Use of Materials for Precast Concrete Wall Panels----------ACI 533.2R-69
Hot Weather Concreting----------ACI 305R-77
Cold Weather Concreting----------ACI 306R-78
Recommended Practice for Measuring, Mixing, Transporting and Placing Concrete----------ACI 304-73 (Rev. 78)
Manual for Quality Control for Plants and Production of Precast Prestressed Concrete Products----------PCI MNL-116-77
Manual of Quality Control for Plants and Production of Architectural Precast Concrete Products----------PCI MNL-117-77

APPENDIX I

24 C.F.R. 200.925a-c
Rules for Multifamily and Care-Type Housing

The following portions of 24 C.F.R. Part 200 have been included for the convenience of the users of this handbook. These provisions establish procedures relating to the use of local or model codes in conjunction with the standards contained in this handbook.

* §200.925a Multifamily and care-type minimum property standards.

* (a) Construction Standards. Multifamily or care-type properties shall comply with the minimum property standards contained in the handbook identified in §200.929(b)(2). In addition, each such property shall, for the Department's purposes, comply with:

(1) The applicable state or local building code, if the property is located within a jurisdiction which has a building code accepted by the Secretary under §200.925a(d); or

(2) (i) The applicable State or local building code, and

(ii) Those portions of the codes identified in 200.925c which are designated by the HUD Field Office serving the jurisdiction in which the property is to be located, if the property is located in a jurisdiction which has a building code partially accepted by the Secretary; or

(3) The appropriate codes, as identified in §200.925c(c), if the property is not located within a jurisdiction which has a building code accepted by the Secretary.

(b) Conflicting Standards. The minimum property standards contained in the handbook identified in §200.929(b)(2) do not preempt State or local standards, nor do they alter or affect a builder's obligation to comply with any State or local requirements. However, a property shall be eligible for benefits only if it complies with all applicable minimum property standards, including referenced standards.

(c) Standard for Evaluating Local Building Codes. The Secretary shall compare a State or local building code
* applicable to residential or institutional occupancy, as
* appropriate and submitted under §200.925a(d), to the list of construction related areas contained in §200.925b.

(1) A State or local code will be accepted if it regulates each area on the list.

(2) A State or local building code will be partially accepted if it regulates most of the areas on the list. Provided, however, that no code may be partially accepted if it fails to regulate subareas in more than one of the major areas: fire safety, light and ventilation, structural loads, foundation systems, materials standards, construction components, glass, mechanical, plumbing, electrical and elevators. See §200.925b.

(3) For purposes of this paragraph, a state or local code regulates an area if it establishes a standard concerning that area.

(d) Review Process and Acceptance.

(1) Jurisdictions without previously accepted building codes. The following submission requirements apply to developers and other interested parties in jurisdictions without building codes, jurisdictions with building codes which have never been submitted for acceptance, and jurisdictions with building codes which have been submitted for acceptance and neither accepted nor partially accepted by the Secretary.

(i) Developers or other interested parties must comply with one of the following by the time of application for insurance or other benefits:

(A) The developer or other interested party may choose to comply with the appropriate codes as identified in §200.925c. If the developer or other interested party
* so chooses, then the multifamily or
* care-type property shall be constructed in accordance with one of the model codes designated in subparagraph (1), (2) or (3) of §200.925c(c) and with any other code or codes identified in the same paragraph. In such instances, the developer or other interested party shall notify the Department of the code or group of codes with which it intends to comply by the time of application for insurance or other benefits; or

(B) The developer or other interested party may choose to comply with the State or local building code, if such code is acceptable to the Secretary. To obtain the Secretary's acceptance, the developer or other interested party shall submit the material specified in §200.925a(d)(1)(ii) to the HUD Field Office serving the jurisdiction in which the property is to be constructed. Such material may be submitted at any time; provide, however, that it must be submitted no later than the time of application for mortgage insurance or other benefits.

(ii) If, under §200.925a(d)(1)(i)(B), the developer or other interested party chooses to comply with the State or local building code as prescribed in §200.925a(a)(1), it shall submit the following material to the HUD Field Office serving the jurisdiction in which the property is to be constructed:

(A) A copy of the jurisdiction's building code, including all applicable service codes, appendices and referenced standards. However, the developer or other interested party need not submit any part already on file in the Field Office; and,

(B) A copy of the statute, ordinance, regulation, or order establishing the code, if such statute, ordinance, regulation or order is not contained in the building code itself.

(2) Jurisdictions with previously accepted or partially accepted building codes. The following submission requirements apply to developers and other interested parties in any jurisdiction with a building code which has been accepted or partially accepted by the Secretary:

(i) At the time of application for mortgage insurance or other benefits, the developer or other interested party shall submit to the HUD Field Office serving the jurisdiction in which the property is to be constructed;

(A) A certificate stating that, since its acceptance by the Secretary, the jurisdiction's building code has not been changed; or

(B) (1) A copy of all changes to the jurisdiction's building code, including all applicable service codes and appendices, which have been made since the date of the code's acceptance by the Secretary. However, the developer or other interested party need not submit any part already in the possession of the field Office; and

(2) A copy of the statute, ordinance regulation, or order making such changes in the code.

(3) Notification of Decision. The Secretary shall review the material submitted under §200.925a(d)(1)(ii) and §200.925a(d)(2)(i). Following that review, the Secretary shall issue a written notice to the submitting party stating whether the State or local building code has been accepted, partially accepted, or whether the Secretary's previous acceptance or partial acceptance has been continued; the basis for the Secretary's decision; and a notification of the submitting party's right to present its views concerning the denial of acceptance if the code is neither accepted nor partially accepted. The Secretary may, in his discretion, permit either an oral or written presentation of views.

(i) If a developer or other interested party is notified that a State or local building code has not been accepted, then the multifamily
* or care-type properties eligible for HUD benefits in that jurisdiction shall be constructed in accordance with the appropriate codes indicated in §200.925c(c). In such instances, the developer or other interested party shall notify the HUD Field Office of the code or codes with which it chooses to comply, in accordance with §200.925a(d)(1)(i)(A).

(ii) If a developer or other interested party is notified that a State or local building code has been partially accepted, then the multi-
* family or care-type properties eligible for HUD benefits in that jurisdiction shall be

constructed in accordance with the applicable State or local building code, plus those additional requirements identified in the written notice issued by the Secretary under §200.925a(d)(3). The written notice shall identify, in accordance with Appendix J of the Handbook identified in §200.929(b)(2), those portions of the codes listed at §200.925c(a) with which the property must comply.

(iii) Each Regional Office will maintain a current list of jurisdictions with accepted building codes and a current list of jurisdictions with partially accepted building codes. The lists acceptance or partial acceptance and will be available to any interested party upon request. In addition, the list of jurisdictions whose codes have been partially accepted shall identify those portions of the codes listed at §200.925c(a) with which the property must comply.

* §200.925b Residential and institutional building code comparison items.

HUD will review each local code submitted under this Chapter to determine whether it regulates all of the following areas and subareas:

(a) Fire safety.

(1) Construction types permitted;
(2) Allowable height and area;
(3) Fire separations;
(4) Fire resistance requirements;
(5) Means of egress (number and distance);
(6) Individual unit smoke detectors;
(7) Building alarm systems;
(8) Highrise criteria.

(b) Light and ventilation.

(1) Habitable rooms;
(2) Bath and toilet rooms.

(c) Structural loads.

(1) Design live loads;
(2) Design dead loads;
(3) Snow loads;
(4) Wind loads;

(5) Earthquake loads (in localities identified by ANSI Standard A 58.1-1982 as being in seismic zones 1, 2, 3 or 4, and Guam.);
(6) Special loads, i.e., soil pressure, railings, interior walls etc.

(d) Foundation systems.

(1) Soil tests;
(2) Foundation depths;
(3) Footings;
(4) Foundation materials criteria;
(5) Piles, i.e., materials, allowable stresses, design;
(6) Excavations.

(e) Materials standards.

(f) Construction components.

(1) Steel;
(2) Masonry;
(3) Concrete;
(4) Gypsum;
(5) Lumber;
(6) Roof construction and covering;
(7) Chimneys and fireplaces.

(g) Glass.

(1) Thickness/area requirements;
(2) Safety glazing.

(h) Mechanical.

(1) Heating, cooling and ventilation systems;
(2) Boilers and pressure vessels;
(3) Gas, liquid and solid fuel piping and equipment;
(4) Chimneys and vents;
(5) Ventilation (air changes).

(i) Plumbing.

(1) Materials standards;
(2) Sizing and installing drainage systems;
(3) Vents and venting;
(4) Traps;
(5) Cleanouts;
(6) Plumbing fixtures;
(7) Water supply and distribution;
(8) Storm drain systems.

(j) Electrical.

(1) Wiring design and protection;
(2) Wiring methods and materials;
(3) Equipment for general use;
(4) Special equipment;
(5) Special conditions;
(6) Communication systems.

(k) Elevators.

(1) Reference ANSI A17.1;
(2) Acceptance tests and periodic tests.

§200.925c Model Codes.

(a) Incorporation by reference. The following publications are incorporated by reference under 5 U.S.C. §552(a) and 1 CFR Part 51. The incorporation by reference of these publications has been approved by the Director of the Federal register. The locations where copies of these publications are available are set forth below.

(1) Model Building Codes.

(i) The BOCA Basic/National Building Code/1984, excluding Article 1, Administration and Enforcement, but including Appendices A, C, D and E of the Code. Available from Building Officials and Code Administrators International, Inc., 4051 West Flossmoor Road, Country Club Hills, Illinois 60477.

(ii) Standard Building Code, 1982 Edition, excluding Chapter 1 - Administration, but including appendices A, C, E and M of the Code, and including Amendments to the Standard Building Code, 1983 Revisions to the 1982 Edition of the Code. Available from Southern Building Code Congress International, Inc., 900 Montclair Road, Birmingham, Alabama 35213-1206.

(iii) Uniform Building Code, 1982 Edition, excluding Part I - Administrative, but including the appendix of the Code. Uniform Plumbing Code, Uniform Mechanical Code, 1982 Edition. Available from International Conference of Building Officials, 5360 South Workman Mill Road, Whittier, California 90601,

(2) National Electrical Code/1984 Edition, including appendices. Available from the National fire Protection Association, Batterymarch Park, Quincy, Massachusetts 02269.

(b) Model Code Compliance Requirements.

* (1) When a multifamily or care-type property is to comply with the model building codes set forth in §200.925c(a)(1), the following requirements of those model codes shall not apply to those properties:

(i) Those provisions of the model codes that do
* not pertain to residential or institutional buildings;

(ii) Those provisions of the model codes that establish energy requirements for multifamily
* or care-type structures; and

(iii) Those provisions of the model codes that require or allow the issuance of permits of any sort.

(2) Where the model codes set forth in §200.925c(a)(1) designate a building, fire, mechanical, plumbing or other official, the Secretary's designee in the HUD Field Office serving the jurisdiction in which the property is to be constructed shall act as such official.

* (c) Designation of Model Codes. When a multifamily or care-
* type property is to comply with a model code, it shall comply with one of the model codes designated in paragraph (1), (2) or (3) below and with any other code or codes identified in the same paragraph. In addition, such property shall comply with all of the standards which are incorporated into such code or codes by reference. The developer or other interested party shall notify the Department of the code or group of codes with which it intends to comply by the time of application for insurance or other benfits.

(1) The BOCA Basic/National Building Code/1984.

(2) Standard Building Code/1982 and the National Electrical Code/1984.

(3) Uniform Building, Plumbing and Mechanical Codes/1982 and the National Electrical Code/1984.

Appendix J

Model Code Provisions for Use in Partially Accepted Code Jurisdictions

If a developer or other interested party is notified that a State or local building code has been partially
* accepted, then the multifamily and care-type properties eligible for HUD benefits in that jurisdiction shall be constructed in accordance with the applicable State or local building code, plus those additional requirements identified in the written notice issued by the Secretary under 24 CFR §200.925a(d) (3).

Depending upon the major area which is not fully regulated by the local code, the HUD Field Office will designate, in accordance with the schedule below, those portions of one of the model codes with which the property must comply. The HUD Field Office is responsible for selecting the particular model code from which the portions are taken.

		BOCA Basic/ National Building Code/1984	Standard Building Code/1982--With 1983 Revisions	Uniform Building Code/1982
(a)	Fire Safety	Articles 4, 5, 6, 8, 14, 17	Chapters 3, 4, 5, 6, 7, 9, 10, 11	Chapters 5, 10, 12, 17, 18, 19, 20, 21, 22, 32, 33, 38; Part VII
(b)	Light and Ventilation	Article 7	Chapter 20	Chapter 10
(c)	Structural Loads	Article 9	Chapter 12	Chapter 23
(d)	Foundation Systems	Articles 10, Section 1807	Chapter 13	Chapters 23, 24, 25, 26, 27, 29
(e)	Materials Standards	Appendix A	Chapters 10, 30	Chapter 60
(f)	Construction Components	Articles 12, 14, 15	Chapter 3, 7, 8, 10, 12, 14, 15, 16, 17 and 18	Chapters 21, 23, 24, 25, 26, 27, 30, 32, 37, 43, 47
(g)	Glass	Article 13	Chapter 27	Chapter 34
(h)	Mechanical	BOCA Basic/ National Mechanical Code/1984	Standard Mechanical Code/1982	Uniform Mechanical Code/1982
(i)	Plumbing	BOCA/BAsic/ National Plumbing Code/1984	Standard Plumbing Code/1982	Uniform Plumbing Code/1982
(j)	Electrical	National Electrical Code/1984	National Electrical Code/1984	National Electrical Code/1984
(k)	Elevators	Article 21	Chapter 24	Chapter 51

All references in this schedule are to the code identified at the top of the column in which the reference appears unless otherwise indicated.

APPENDIX K

24 C.F.R. 200.926
Rules for One and Two Family Dwellings

The following portions of 24 C.F.R. Part 200 have been included for the convenience of the users of this handbook. These provisions establish procedures for the construction of one and two family dwellings and reference standards found in the Appendices of this handbook.

§ 200.926 Minimum property standards for one and two family dwellings.

(a) Construction standards.

(1) Applicable structures. The standards identified or contained in § § 200.926 and 200.926a-200.926e shall apply to single family detached homes, duplexes, triplexes and to living units in a structure where the units are located side by side in rowhouse fashion.

(2) Applicability of standards for new construction. The standards referenced in paragraph (a)(1) of this section are applicable to:

(i) Structures approved for insurance or other benefits prior to the start of construction;

(ii) Structures which are approved for insurance or other benefits based upon participation in an insured warranty program;

(iii) Structures which are insured as new construction based upon a Certificate of Reasonable Value issued by the Veterans Administration; and

(iv) Proposed construction insured under the Direct Endorsement program.

(b) Conflicting standards. The requirements contained in § 200.926d do not preempt local or State standards, nor do they alter or affect a builder's obligation to comply with any local or State requirements. However, a property shall be eligible for benefits only if it complies with the requirements of this subpart, including any referenced standards. When any of the requirements identified in § 200.926c are in conflict with a partially accepted local or State code, the conflict will be resolved by the HUD Field Office servicing the jurisdiction in which the property is to be located.

(c) Standard for evaluating local or State building codes. The Secretary shall compare a local building code submitted under § 200.926(d) or a State code to the list of construction related areas contained in § 200.926a.

(1) A local or State code will be accepted if it regulates each area and subarea on the list.

(2) A local or State building code will be partially accepted if it regulates most of the areas on the list. Provided, however, that no code may be partially accepted if it fails to regulate subareas in more than one of the major areas. The major areas are: fire safety, light and ventilation, structural loads, foundation systems, materials standards, construction components, glass, mechanical, plumbing and electrical. See § 200.926a.

(3) For purposes of this paragraph, a local or State code regulates an area or subarea if it establishes a standard concerning that area or subarea.

(d) Code selection. Any materials required to be submitted under this section must be submitted by the time the lender or other interested party applies for mortgage insurance or other benefits.

(1) Jurisdictions without previously accepted building codes. The following submission requirements apply to lenders and other interested parties in jurisdictions without building codes, jurisdictions with which have never been submitted for acceptance, and jurisdictions with building codes which previously have been submitted for acceptance and have not been accepted or partially accepted by the Secretary.

(i) In jurisdictions without local building codes:

(A) If the State building code is acceptable, the lender or other interested party must comply with the State building code and the requirements of § 200.926d;

(B) If the state building code is partially acceptable, the lender or other interested party must comply with:

(1) The acceptable portions of the partially acceptable code; and

(2) Those portions of the CABO One and Two Family Dwelling Code or the Electrical Code for One-and Two-Family Dwellings designated by the HUD Field Office in accordance with § 200.926c; and

(3) The requirements of § 200.926d.

(C) If there is no State building code or if the State building code is unacceptable, the lender or other interested party must comply with:

(1) The CABO One and Two Family Code and the Electrical Code for One-and Two-Family Dwellings, as identified in § 200.926b(a); and

(2) The requirements of § 200.926d.

(ii) In jurisdictions with local building codes which have never been submitted for review, lenders or other interested parties must:

(A) Comply with the requirements of § 200.926(d)(1)(i)(A), (B) or (C), as appropriate; or

(B) Request the Secretary's acceptance of the local building code in accordance with § 200.926(d)(1)(iv).

(1) If the Secretary determines that the local building code is unacceptable, then the lender or other interested party must comply with the requirements of § 200.926 (d)(1)(i)(A), (B) or (C), as appropriate.

(2) If the Secretary determines that the local code is partially acceptable, then the lender or other interested party must comply with:

(i) The acceptable portions of the partially acceptable local code; and

(ii) Those portions of the CABO One and Two Family Dwelling Code or Electrical Code for One- and Two-Family Dwellings designated by the HUD Field Office in accordance with § 200.926c; and

(iii) The requirements of § 200.926d.

(3) If the Secretary determines that the local code is acceptable, then the lender or other interested party must comply with the local building code and the requirements of § 200.926d.

(iii) In jurisdictions with local building codes which previously have been submitted for review and which have been found unacceptable by the Secretary:

(A) If the local code has not been changed since the date the code or changes thereto were submitted to the Secretary, the flender or other interested party must comply with the requirements of § 200.926(d)(1)(i)(A), (B) or (C), as appropriate; or

(B) If the local code has been changed since the date when the code or changes thereto were submitted to the Secretary, the lender or other interested party must submit a copy of all changes to the local building code, including all applicable service codes and appendices and a copy of the statute, ordinance, regulation or order making such changes in the code, which have been made since the date when the code or other changes thereto were last submitted to the Secretary. However, the lender or other interested party need not submit any part already in the possession of the HUD Ffield Office. Based upon the Secretary's determination concerning the acceptability of the local code as changed, the lender or other interested party must comply with the requirements of § 200.926(d)(1)(ii)(B)(1) (2) or (3), as appropriate.

(iv) In order to obtain the Department's approval of a local code, the lender or other interested party must submit the following material to the HUD Field Office serving the jurisdiction in which the property is to be constructed:

(A) A copy of the jurisdiction's local building code, including all applicable service codes and appendices; and

(B) A copy of the statute, ordinance, regulation, or order establishing the code, if such statute, ordinance, regulation or order is not contained in the building code itself. However, the lender or other interested party need not submit any document already on file in the HUD Field Office.

(2) Jurisdictions with previously accepted or partially accepted building codes.

(i) The lender or other interested party shall submit to the HUD Field Office serving the jurisdiction in which the property is to be constructed:

(A) A certificate stating tha, since the date when the code or any changes thereto were last submitted to the Secretary, the jurisdiction's local building code has not been changed; or

(B) (1) A copy of all changes to the jurisdiction's building code, including all applicable service codes, and appendices, which have been made since the date when the code or other changes thereto were last submitted to the Secretary. However, the lender or other interested party need not submit any part already in the possession of the HUD Field Office; and

(2) A copy of the statute, ordinance regulation, or order making such changes in the code.

(ii) If, based upon changes to the local building code, the Secretary determines that it is unacceptable, the lender or other interested party must comply with the requirements of § 200.926(d)(1)(i)(A), (B) or (C), as appropriate.

(iii) If the local building code was previously found by the Secretary to be partially acceptable and there have been no changes to it or if the local building code was previously found by the Secretary to be partially and if, based upon changes to it, the Secretary determines that it is still partially acceptable or if the local building code was previously found by the Secretary to be acceptable and if, based upon changes to it the Secretary determines that it is partially acceptable, then the lender or other interested party must comply with § 200.926(d)(1)(ii)(B), (2)(i), (ii) and (iii).

(iv) If the local building code was previously found by the Secretary to be partially acceptable and if, based upon changes to it, the Secretary determines that it is acceptable, or if the local building code was previously found by the Secretary to be acceptable and there have been no changes to the code, or if the local bulding code was p reviously found by the Secretary to be acceptable and if, based upon changes to it, the Secretary determines that it is still acceptable, then the lender or other interested party must comply with the local building code and the requirements of § 200.926d.

(3) Notification of decision. The Secretary shall review the material submitted under § 200.926(d). Following that review, the Secretary shall issue a written notice (except where there is a previously accepted or partially accepted code which has not been changed) to the submitting party stating whether the local building code is acceptable, partially acceptable, or not acceptable. Where the local building code is not acceptable, the notice shall also state whether the State code is acceptable, partially acceptable or not acceptable. The notice shall also contain the basis for the Secretary's decision and a notification of the submitting party's right to present its views concerning the denial of acceptance if the code is neither accepted nor partially accepted. The Secretary may, in his discretion, permit either an oral or written presentation of views.

(4) Department's responsibilities.

(i) Each Regional and Field Office will maintain a current list of jurisdictions with accepted local or State building codes, a current list of jurisdictions with partially accepted local or State building codes and current list of jurisdictions with local or State building codes which have not been accepted. For local codes, the lists will state the most recent date when the code or changes thereto were submitted to the Secretary. The lists, which shall be prepared by the Fidld Offices and submitted to the Regional Offices, will be available to any interested party upon request. In addition, the list of jurisdictions whose codes have been partially accepted shall identify in accordance with § 200.926c those portions of the codes listed at § 200.926b(a) with which the property must comply.

(ii) The Department is responsible for obtaining copies of the State codes and any changes thereto.

§ 200.926a Residential building code comparison items.

HUD will review each local and State code submitted under this subpart to determine whether it regulates all of the following areas and subareas:

(a) Fire safety.

(1) Allowable height;
(2) Fire separations;
(3) Fire resistance requirements;
(4) Egress doors and windows;
(5) Unit smoke detectors;
(6) Flame spread.

(b) Light and ventilation.

(1) Habitable rooms;
(2) Bath and toilet rooms.

(c) Structural loads.

(1) Design live loads;
(2) Design dead loads;
(3) Snow loads (for jurisdictions with snow loading conditions identified in Section 7 of ANSI A58.1-82);
(4) Wind loads;
(5) Earthquake loads (for jurisdictions in seismic zones 3 or 4 as identified in Section 9 of ANSI A58.1-82).

(d) Foundation systems.

(1) Foundation depths;
(2) Footings;
(3) Foundation materials criteria.

(e) Materials standards.

(1) Materials standards.

(f) Construction components.

(1) Steel;
(2) Masonry;
(3) Concrete;
(4) Lumber;
(5) Roof construction and covering;
(6) Chimneys and fireplaces.

(g) Glass.

(1) Thickness/area requirements;
(2) Safety glazing.

(h) Mechanical.

(1) Heating, cooling and ventilation systems;
(2) Gas, liquid and solid fuel piping and equipment;
(3) Chimneys and vents;
(4) Ventilation (air changes).

(i) Plumbing.

(1) Materials standards;
(2) Sizing and installing drainage systems;
(3) Vents and venting;
(4) Traps;
(5) Cleanouts;
(6) Plumbing fixtures;
(7) Water supply and distribution;
(8) Sewage disposal systems.

(j) Electrical.

(1) Branch circuits;
(2) Services;
(3) Grounding;
(4) Wiring methods;
(5) Cable;
(6) Conduit;
(7) Outlets, switches and junction boxes;
(8) Panelboards.

§ 200.926b Model codes.

(a) Incorporation by reference. The following model code publications are incorporated by reference in accordance with 5 U.S.C. 552(a) and 1 CFR Part 51. The incorporation by reference of these publications has been approved by the Director of the Federal Register. The locations where copies of these publications are available are set forth below.

(1) CABO One and Two Family Dwelling Code, 1983 edition, with 1984 and 1985 Amendments, excluding Chapter 1-Administrative; Part VI-Electrical; and Part VII-Energy Conservation, but including Appendices A and B of the Code. Available from Council of American Building Officials, 5203 Leesburg Pike, Falls Church, VA 22041.

(2) Electrical Code for One-and Two-Family Dwellings, NFPA 70A, 1984 Edition, including appendices. Available from the National Fire Protection Association, Batterymarch Park, Quincy, Massachusetts 02269.

(b) Model code compliance requirements.

(1) When a one or two family dwelling is to comply with the model codes set forth in § 200.926(a), the following requirements of those model codes shall not apply to those properties:

(i) Those provisions of the model codes that establish energy requirements for one and two family dwellings; and

(ii) Those provisions of the model codes that require or allow the issuance of permits of any sort.

(2) Where the model codes set forth in § 200.926b(a) designate a building, fire, mechanical, plumbing or other official, the Secretary's designee in the HUD Field Office serving the jurisdiction in which the dwelling is to be constructed shall act as such official.

(c) Designation of Model Codes. When a one or two family dwelling is to comply with portions of a model code or the entire model code, it shall comply with the model codes in paragraph (c)(1) and/or (c)(2) of this section as designated by the HUD Field Office serving the jurisdiction in which the property is located. In addition, such property shall comply with all of the standards which are referenced in such code or codes.

(1) CABO One and Two Family Dwelling Code/1983 with 1984 and 1985 Amendments.

(2) Electrical Code for One-and Two-Family Dwellings, NFPA 70A/1984.

§ 200.926c Model code provisions for use in partially accepted code jurisdictions.

If a lender or other interested party is notified that a State or local building code has been partially accepted, then the properties eligible for HUD benefits in that jurisdiction shall be constructed in accordance with the applicable State or local building code, plus those additional requirements identified below. Depending upon the major area identified in § 200.926a which is not adequately regulated by the State or local code, the HUD Field Office will designate, in accordance with the schedule below, those portions of one of the model codes with which the property must comply.

Schedule for Model Code Supplements to Local or State Codes

Deficient major from § 200.926a as determined by field office review	Portions of the CABO 1-and 2-Family Dwelling Code/1983 with 1984 and 1985 amendments with which property must comply
(a) Fire safety	Chapters 2, 9; Section R-402.
(b) Light and ventilation.....	Chapter 2; Section R-309.
(c) Structural loads.....	Chapter 2.
(d) Foundation systems.....	Chapter 3.
(e) Materials standards.....	Chapter 26.
(f) Construction components....	Part III.
(g) Glass.....	Chapter 2.
(h) Mechanical.....	Part IV.
(i) Plumbing.....	Part V.
(j) Electrical.....	Electrical Code for 1- and 2-Family Dwellings (NFPA 70A-1984).

§ 200.926d Construction Requirements.

(a) Application.

(1) General.

These standards cover the actual site, the immediate site environment for the dwellings, including streets, storm water disposal, and other services and facilities for the site.

(2) Requirements for Accessibility to Physically Handicapped People

The HUD Field Office will advise project sponsors as to the extent accessibility will be required for new consruction of one- and two-family dwellings on a project-by-project basis.

(i) Technical Standards

See HUD, Minimum Property Standards, 4910.1 Sections 100-1.3b and 100-1.3c.

(3) Variations to standards.

(i) New materials and technologies.

See § 200.926d(d). Alternatives, nonconventional or innovative methods and materials shall be equivalent to these standards in the areas of structural soundness, durability, economy of maintenance or operation and usability.

(ii) Variation procedures.

Variations from the requirements of any standard with which the Department requires compliance shall be made in the following ways:

(A) For a particular design or construction method to be used on a single case or project, the decision is the responsibility of the Field Office. Headquarters concurrence is not required.

(B) Where a variation is intended to be on a repetitive basis, a recommendation for a Local Acceptable Standard, substantiating data, and background information shall be submitted by the Field Office to the Director, Office of Manufactured Housing and Regulatory Functions.

(iii) Variances which require individual analysis and decision in each instance are not considered as repetitive variances even though one particular standard is repeatedly the subject of variation. Such variances are covered by § 200.926d(a)(4)(ii)(A).

(b) General acceptability criteria.

(1) Real estate entity.

The property shall comprise a single plot except that a primary plot with a secondary plot for an appurtenant garage or for other use contributing to the marketability of the property will be acceptable provided the two plots are in such proximity as to comprise a readily marketable real estate entity.

(2) Service and facilities.

(i) Trespass.

Each living unit shall be one that can be used and maintained individually without trespass upon adjoining properties, except when the windowless wall of a detached dwelling is located on a side lot line. A detached dwelling may be located on a side lot line if:

(A) Legal provision is made for permanent access for the maintenance of the exterior portion of the lot line wall, and

(B) The minimum distances from the dwelling to the dwellings on the abutting properties are not less than the sum of the side yeard distances computed as appropriate for the type of opposing walls. (Minimum distance 10 ft.)

(ii) Utilities.

Utility services shall be independent for each living unit, except that common services such as water, sewer, gas and electricity may be provided for living units under a single mortgage or ownership. Separate utility service shut-off for each unit shall be provided. For living units under separate ownership, common utility services may be provided from the main to the building line when protected by an easement or convenant and maintenance agreement acceptable to HUD, but shall not pass over, under or through any other living unit. Individual utilities serving a living unit may not pass over, under or through another living unit under the same mortgage unless provision is made for repair and

maintenance of utilities without trespass or when protected by an easement of covenant providing permanent access for maintenance and repair of the utilities. Building drain cleanouts shall be accessible from the exterior where a single drain line within the building serves more than one unit.

(3) Site conditions.

(i) The property shall be free of those foreseeable hazards and adverse conditions which may affect the health and safety of the occupants or the structural soundness of the improvements, or which may impair the customary use and enjoyment of the property. The hazards include toxic chemicals, radioactive materials, other pollution, hazardous activities, potential damage from soil or other differential ground movements, ground water, inadequate surface drainage, flood, erosion, or others located on or off site. The site must meet the standards set forth at 24 CFR Part 51.

(ii) When special conditions exist or arise during construction which were unforeseen and which necessitate precautionary or hazard mitigation measures, the HUD Field Offices shall require corrective work to mitigate potential adverse effects from the special conditions as may be necessary. Special conditions include rock formations, unstable soils or slopes, high ground water levels, springs, or other conditions which may adversely effect a property. It shall be the builder's responsibility to assure proper design, construction and satisfactory performance where they are present.

(4) Access.

(i) Each property shall be provided with vehicular or pedestrian access by a public or private streets. Private streets shall be protected by permanent easement.

(ii) Each living unit shall have a means of access such that it is unnecessary to pass through any other living unit.

(iii) The rear yard shall be accessible without passing through any other living unit.

(iv) For a row type dwelling, the access may be by means of alley, easement, passage through the dwelling, or other means acceptable to the HUD Field Office.

(c) Site design.

(1) General.

(i) A site design shall be provided which includes an arrangement of all site facilities necessary to create a safe, functional, healthful, durable and energy efficient living environment.

(ii) These site design standards are applicable only in communities which have not adopted criteria for site development applicable to one and two family dwellings.

(iii) Single family detached houses situated on individual lots located on existing streets with utilities need not comply with the requirements of §200.926d(c)(2),(3) and (4)(ii).

(2) Streets.

(i) Existing or proposed streets on the site shall connect to private or public streets and shall provide all-weather access to all buildings for essential and emergency use, including access needed for deliveries, service, maintenance and fire equipment.

(ii) Streets shall be designed for dedication for public use and maintenance or, when approved by the HUD Field Office, may be retained as private streets where protected by permanent easements.

(3) Dedication.

Utilities shall be located to permit dedication to the local government or appropriate public body.

(4) Drainage and flood hazard exposure.

(i) The minimum grades at buildings and at openings into basements shall be at elevations which prevent adverse effect by water or water entering basements from flood levels equivalent

to a 50 year return frequency after full development. The floor elevations of all habitable space shall be above runoff and flood levels equivalent to a 100 year return frequency after full development.

(ii) Streets shall be usable during runoff equivalent to a 10 year return frequency. Where drainage outfall is inadequate to prevent runoff equivalent to a 10 year return frequency from ponding over 6 in. deep, streets shall be made passable for commonly used emergency vehicles during runoff equivalent to a 25 year return frequency, except where an alternate access street not subject to such ponding is available.

(iii) Crawl spaces shall not pond water or be subject to prolonged dampness.

(d) Special construction and product acceptance.

(1) Structural features of factory produced (modular or panelized) housing or components.

(i) For factory fabricated systems or components, HUD Handbook 4950.1, "Technical Suitability of Products Program Technical and Processing Procedures" shall apply.

(ii) These requirements of this Part shall apply to structural features, consisting of factory fabricated systems or components assembled either at the factory or at the construction site, if the total construction is covered by these standards and can be inspected on-site for determination of compliance.

(2) Non-structural or non-standard features.

These features include methods of construction, systems, sub-systems, components, materials and processes which are not covered by these requirements. See HUD Handbook 4950.1 for procedures to be followed in order to obtain acceptance of non-structural components or materials. See HUD Handbook 4910.1 Appendix F for a list of Use of Materials Bulletins. Products and methods shall conform to the appropriate Use of Materials Bulletin.

(3) Standard features.

These features include methods of construction, systems, sub-systems, components, materials and processes which are covered by national society or industry standards. For a list of standards to which compliance is required, see HUD Handbook 4910.1, Appendix C.

(e) Thermal requirements.

(1) Building insulation.

(i) General.

Buildings shall be insulated so as to ensure conservation of energy, economy of operation and comfort to the occupants.

(ii) Overall Coefficient of Heat Transmission.

(A) All buildings which are heated or cooled mechanically shall be constructed to comply with the U values shown in the table at § 200.926a(e)(1)(iii). The U values shown do not include adjustments for framing in walls, ceilings or floors, nor for the sash frame in windows or glass doors.

(B) Where the stated U value of any one component of roof deck, ceiling, wall or floor cannot be practically obtained, such U value may be increased to the minimum figure attainable and the U value for other components decreased until the overall heat gain or heat loss does not exceed the total attained by conformance to the stated U values. (See Note 2 of the table at § 200.926d (e)(1)(iii)).

(iii) Component coefficient values.

For ceilings, walls, floors and openings, U values shall not exceed those shown in the following table.

Maximum U Values for Ceiling, Wall and Floor Sections for Electric Resistance Heat (E.R.) and Heat Pump or Fossil Fuel Heat (F.F.) [1]

Heating Degree Days	Ceilings[2,3]		Walls[2]		Floors[4]		Windows[5]		Sliding Glass Doors[5]		Storm Doors[6]	
(65° F Base)	E.R.	F.F.	E.R.	F.F.	E.R.	F.F.	E.R.	F.F.	E.R.	F.F.	E.R.	F.F.
0 - 1000	.05	.05	.08	.08	--	--	1.13	1.13	1.13	1.13	No	No
1001 - 2500	.04	.05	.07	.08	--	--	.69	1.13	.69	1.13	No[7]	No
2501 - 3500	.03	.04	.05	.08	.07	--	.69	1.13	.69	1.13	No[7]	No
3501 - 4500	.03	.03	.05	.07	.05	.07	.69	.69	.69	.69	No[7]	No
4501 - 6000	.03	.03	.05	.07	.05	.07	.47	.69	.69	.69	Yes	No[7]
6001 - 7000	.026	.03	.05	.07	.05	.07	.47	.69	.69	.69	Yes	No[7]
7001 +	.026	.026	.05	.05	.05	.05	.47	.47	.69	.69	Yes	Yes

Notes

1 For areas of 5000 heating degree days (HDD) or less, houses using heat pumps may be insulated to levels required for fossil fuels. In areas above 5000 HDD, houses using air-to-air heat pumps shall be insulated to levels required for electric resistance (ER) heating, except where the following are used:

a. Water source heat pumps.

b. Fossil fuel supplement heat.

c. Units with multiple capacity.

1. Dual compressors

2. Modulating compressor speed

3. Dual speed compressor

d. Uni-directional heat pumps (such as annual cycle energy systems, (ACES)).

e. Units with balanced heating and cooling load.

2 The following combinations of wall and ceiling values are considered to provide annual heating and cooling consumption comparable to that predicted for values in the above Table and may be substituted accordingly. Other components shall conform to the values shown below for the specific heating degree day (HDD):

HDD (65° F)	ER		FF	
	CLG	WALL	CLG	WALL
0 - 1000	.04	.14	.04	.14
	.03	.15	.03	.15
	.026	.16	.026	.16
1001 - 1500	†	†	.04	.13
	.03	.13	.03	.14
	.026	.14	.026	.16
1501 - 2500	†	†	.04	.12
	.03	.11	.03	.13
	.026	.12	.026	.14
2501 - 3000	†	†	.03	.12
	.026	.07	.026	.13

† See Table at § 200.926d(e)(1)(iii).

3 Includes roof/ceiling assemblies, in which the finished ceiling is the underside of the roof deck.

4 For floors of heated spaces over unheated basements, unheated garages or unheated crawl spaces. A basement, crawl space or garage shall be considered unheated unless it is provided with a positive heat supply sufficient to maintain a minimum temperature of 50° F. A positive heat supply is defined as heat supplied to a space by design or by heat losses occuring from energy-consuming systems or components associated with that space. Where the walls of an unheated basement or crawl space are insulated in lieu of floor insulation, the total heat loss attributed to the floor from the heated area shall not exceed the heat loss calculated for floors with required insulation.

5 Maximum glass area shall not exceed 15 percent of the gross area of all exterior walls enclosing heated spaces, except when it can be demonstrated that the winter daily solar heat gain exceeds the 24 hour heat loss and the glass area is properly screened from summer solar heat gain. In areas where cooling is the predominant load and the heating load is insignificant (as an example, 2000 or more cooling hours and 2000 or less heating degree days), the maximum glazing area stated above may be waived when glass area is properly screened from solar heat gain. Any additional glass area shall have a significant portion of operable sash in order to provide natural ventilation.

6 A 1-3/4 inch metal faced door system with an insulated core and durable weatherstripping providing a U value equal or better than 0.32, and an infiltration rate no greater than .50 cfm per foot of crack length, tested according to ASTM E 283 at 1.567 psf of air pressure, may be substituted for a conventional door and storm door. All exterior doors shall be weatherstripped.

7 In areas with 1501 or more heating degree days, a storm door is required when the primary door is a hollow core door or is over 25% glass.

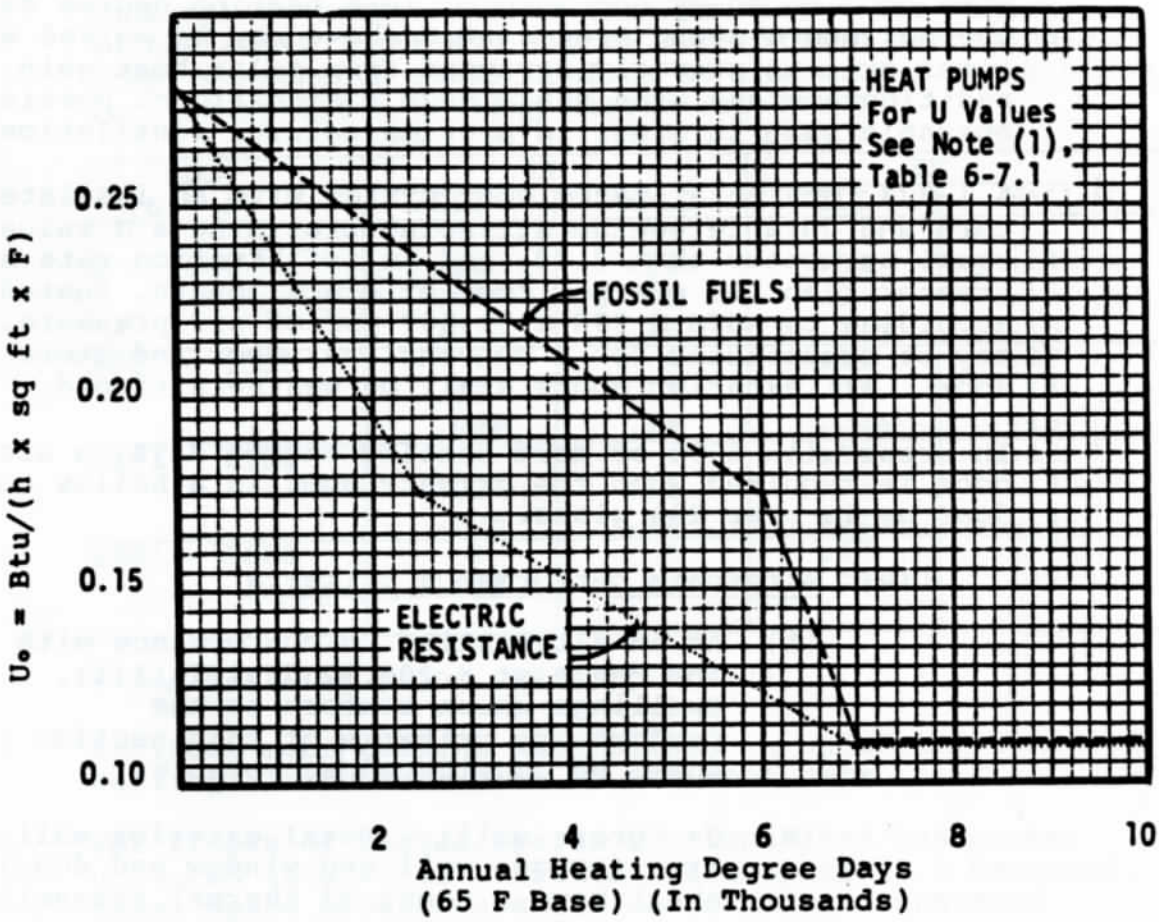
(iv) Alternate performance criteria

(A) As an alternative to conformance with the table at § 200.926d(e)(1)(iii), dwellings which conform to the performance criteria of this section shall be considered acceptable.

(B) U_o (gross wall) - Total exterior wall area (opaque wall and window and door) shall have a combined thermal transmittance value (U_o value) not to exceed the values shown in Figure 1. Equation 1 shall be used to determine acceptable combinations to meet the requirements of Figure 1.

(C) U_o (gross ceiling) - Total ceiling area (opaque ceiling and skylights) shall have a combined thermal transmittance value (U_o value) not to exceed the values shown in Figure 2. Equation 2 shall be used to determine acceptable combinations to meet the requirements of Figure 2.

FIGURE 1 - GROSS WALLS



Equation 1 Formula for Determining Combinations (See Figure 1)

$$U_o = (U_{wall} A_{wall} + U_{window} A_{window} + U_{door} A_{door})/A_o,$$

where: U_o = the average thermal transmittance of the gross wall area, Btu/(h x sq. ft. x F),

A_o = the gross area of all exterior walls enclosing heated spaces, sq. ft.,

U_{wall} = the thermal transmittance of all elements of the opaque wall area, Btu/(h x sq. ft. x F),

A_{wall} = opaque wall area enclosing heated spaces, sq. ft.,

U_{window} = the thermal transmittance of the window area, Btu/(h x sq. ft. x F),

A_{window} = window area (including sash), sq. ft.,

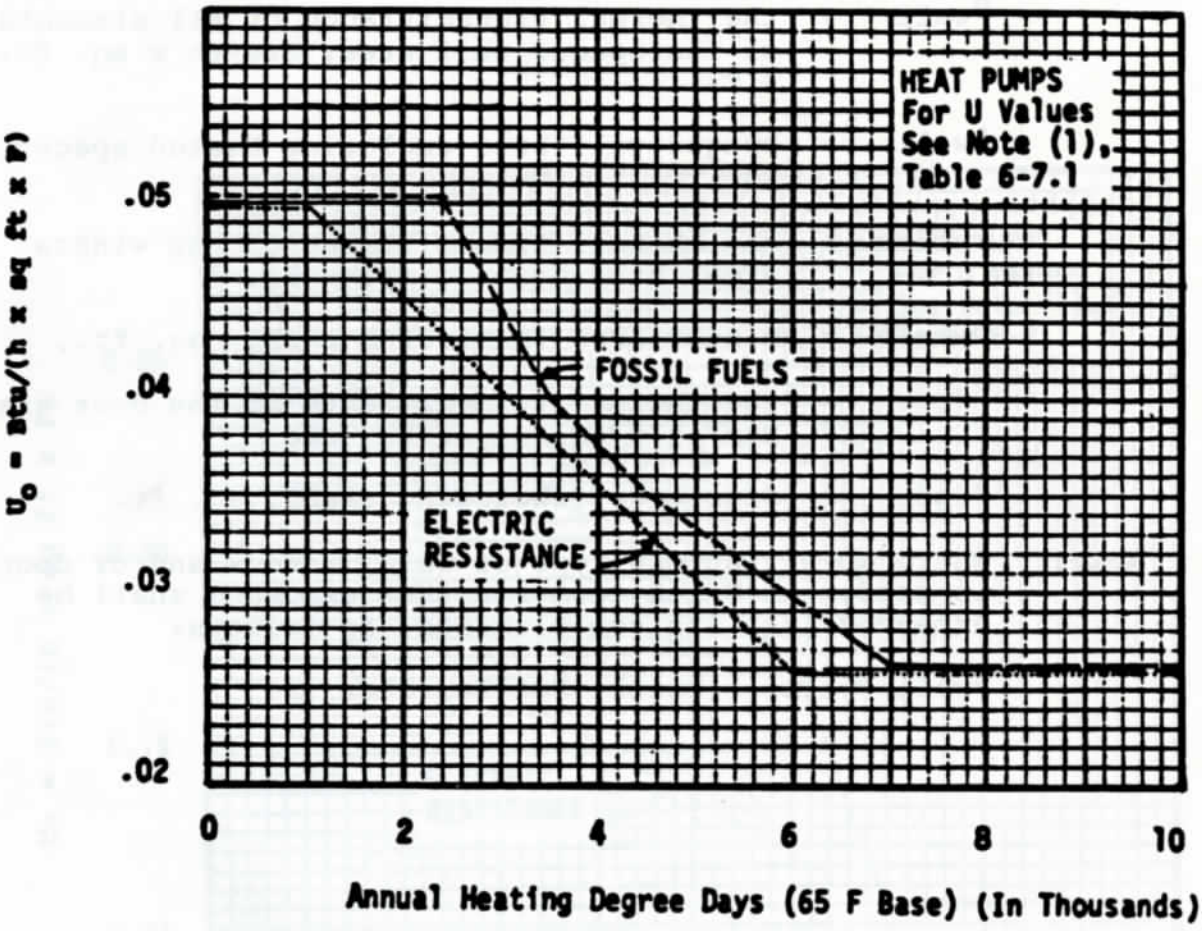
U_{door} = the thermal transmittance of the door area, Btu/(h x sq. ft. x F), and

A_{door} = door area (including sash), sq. ft.

Note: Where more than one type of wall, window and/or door is used, the U x A term for that exposure shall be expanded into its sub-elements, as follows:

$U_{wall_1} A_{wall_1} + U_{wall_2} A_{wall_2}$, etc.

GROSS CEILING - FIGURE 2



Equation 2 Formula for Determining Roof/Ceiling Combinations

$$U_o = ({}^{U}roof{}^{A}roof + {}^{U}skylight{}^{A}skylight / A_o,$$

where: U_o = the average thermal transmittance of the gross roof/ceiling area, Btu/(h x sq. ft. x F),

A_o = the gross area of a roof/ceiling assembly, sq. ft.,

A_{roof} = opaque roof/ceiling area, sq. ft.,

U_{roof} = the thermal transmittance of all elements of the opaque roof/ceiling area, Btu/(h x sq. ft. x F),

$U_{skylight}$ = the thermal transmittance of all skylight elements in the roof/ceiling assembly, Btu/(h x sq. ft. x F),

$A_{skylight}$ = skylight area (including frame), sq. ft.

Note to Equation 2

Where more than one type of roof/ceiling and/or skylight is used, the U x A term for that exposure shall be expanded into its sub-elements, as:

$$U_{roof_1} A_{roof_1} + U_{roof_2} A_{roof_2}, \text{ etc.}$$

(v) Overall structure performance alternative.

Structures which can be shown by accepted engineering practice to have energy consumption equal to or less than that which would be obtained by conformance to the criteria of § 200.926d(e)(1)(iii) or (iv) shall be considered acceptable. The contribution of passive solar energy and the related storage and reradiation capacity of masonry, water and other mass may be recognized in computing energy consumption under this alternate method. The following requirements shall govern in determining comparability:

(A) The methodology shall be cost effective to the energy consumer.

(B) The methodology shall not adversely affect the structural capacity, durability, or safety aspects of the structure.

(C) All data and calculating must show valid performance comparison between the proposed option and a structure comparable in size, configuration, orientation and occupant usage designed in accordance with § 200.926d(e)(1)(iii) or (iv).

(vi) Basement or crawl space foundation walls.

Insulation may be omitted from floors over heated basement areas or heated crawl spaces if foundation walls are insulated. Foundation walls of heated areas below grade need not be insulated except where recreation or similar use rooms or habitable rooms are provided, or where more than 50 percent of the wall is exposed to outside air. The U value of

foundation wall sections shall not exceed the value shown in the following table except where the alternative methods shown in § 200.926d(e)(1)(iv) or (v) are employed and foundation walls are included in the determination of the average thermal transmittance of the gross wall area.

Maximum U Values of the Foundation Wall Sections of Heated Basement or Heated Crawl Space

Heating Degree Days (65° F Base)	Maximum U Value
2500 or less	No Requirement
2501 to 4500	0.17
4501 or more	0.10

(vii) Crawl space plenum walls.

When a crawl space is used as a supply or return plenum, the crawl space perimeter wall shall be insulated to provide a maximum heat loss of 35 Btuh per lineal foot of perimeter wall, assuming a crawl space air temperature of 70° F for return plenums and 110° F for supply plenums.

(viii) Slab-on-grade floors.

For slab-on-grade floors of heated or mechanically cooled spaces, the thermal resistance of the insulation around the perimeter of the floor shall be not less than shown in the following table. Insulation shall extend downward from the top of the slab for not less than 24 in. or downward to the bottom of the slab and horizontally beneath the slab for a minimum total distance of 24 in.

Minimum R Values of Perimeter Insulation for Slabs-on-Grade

Heating Degree Days (65° F Base)	Minimum R Values[1]	
	Heated Slab	Unheated Slab
500 or less	2.8	---
1000	3.5	---
2000	4.0	---
2500	4.4	2.5
3000	4.8	2.8
4000	5.5	3.5
5000	6.3	4.2
6000	7.0	4.8
7000	7.8	5.5
8000	8.5	6.2
9000	9.2	6.8
10000 or greater	10.0	7.5

Note:

1 For increments between degree days shown, U values may be interpolated, or the values shown in Figure 2 of ASHRAE 90A-80 may be substituted.

(ix) Heat loss and heat gain calculations.

(A) Calculations of heat loss and heat gain shall be made in accordance with the data and procedures contained in the American Society of Heating Refrigerating and Air-conditioning Engineers' (ASHRAE) Handbook of Fundamentals-1985, the Hydronics Insitute's "Heat Loss Calculation Guide" H-21-1984 and "Cooling Load Calculation Guide" C-30-1965, and the Air Conditioning Contractors of America's "Load Calculation for Residential Winter and Summer Air Conditioning" Manual J-1981.

(B) Inside design temperature shall be 70° F for heating and 75° F for cooling. The outside design temperature for heating shall be that established by the ASHRAE Handbook of Fundamentals at the 97.5% winter design dry bulb temperature for the location involved. The outside design temperature for cooling shall be that established by the ASHRAE Handbook of Fundamentals at the 2.5% summer design dry bulb temperature for the location involved.

(f) Water supply systems.

(1) General.

(i) Each living unit shall be provided with a continuing and sufficient supply of safe water under adequate pressure and of appropriate quality for all household uses. This system shall not impair the function or durability of the plumbing system or attachments.

(ii) The chemical and bacteriological standards of the local health authority shall apply. In the absence of such standards, the maximum contaminant levels of EPA shall apply. A water analysis may be required by either the health authority or the HUD Field Office.

(iii) Whenever feasible, connection shall be made to a public water system. When a public system is not available, connection shall be made to a community system which shall comply with HUD Handbook 4940.2.

(2) Individual Water Systems.

(i) The system should be capable of delivering a flow of 5 gpm over at least a 4 hour period.

(ii) Water that requires continuing or repetitive treatment to be safe bacterially or chemically is not acceptable. Individual dwelling water purification units are not an acceptable alternative but may be used to improve acceptable water.

(iii) After installation, the system shall be disinfected in accordance with the recommendations or requirements of the local health authority. In the absence of a health authority, system cleaning and disinfection shall conform to the current EPA Manual of Individual Water Supply Systems.

(iv) Bacteriological or chemical examination of a water sample collected by a representative of the local or state health authority shall be made when required by that authority or the HUD Field Office.

(3) Location of wells.

(i) A well located within the foundation walls of a dwelling is not acceptable except in arctic or subarctic regions.

(ii) Water which comes from any soil formation which may be polluted, contaminated, fissured, creviced or less than 20 ft. below the natural ground surface is not acceptable, unless acceptable to the local health authority.

(iii) Individual water supply systems are not acceptable for individual lots in areas where chemical soil poisoning has been or is practiced if the overburden of soil between the ground surface and the water bearing strata is coarsegrained sand, gravel, or porous rock, or is creviced in a manner which will permit the recharge water to carry the toxicants into the zone of saturation.

(iv) The following table shall be used in establishing the minimum acceptable distances between wells and sources of pollution located on either the same or adjoining lots. These distances may be increased by either the health authority having jurisdiction or the HUD Field Office.

DISTANCE FROM SOURCE OF POLLUTION

Source of Pollution	Minimum Horizontal Distance (ft.)
Property Line	10
Septic Tank	50
Absorption Field	100[1]
Seepage Pit	100[1]
Absorption Bed	100[1]
Sewer Lines w/ Permanent Watertight Joints	10
Other Sewer Lines	50
Chemically Poisoned Soil	25[3]
Dry Well	50
Other	---[2]

Note:

1 This clearance may be increased or decreased depending upon soil and rock penetrated by the well and aquifer conditions. The clearance may be

increased in creviced limestone and permeable strata of gravel and sand. The clearance may be reduced to 50 ft. only where the ground surface is effectively separated from the water bearing formation by an extensive, continuous impervious strata of clay, hardpan, or rock. The well shall be constructed so as to prevent the entrance of surface water and contaminants.

2 The recommendations or requirements of the local health authority shall apply.

3 This clearance may be reduced to 15 feet only where the ground surface is effectively separated from the water bearing formation by an extensive, continuous impervious strata of clay, hardpan, or rock.

(4) Well Construction

(i) The well shall be constructed so as to allow the pump to be easily placed and to function properly.

(ii) (A) All drilled wells shall be provided with a sound, durable and watertight casing capable of sustaining the loads imposed.

(B) The casing shall extend from a point several feet below the water level at drawdown or from an impervious strata above the water level, 12 in. above either the ground surface or the pump room floor. The casing shall be sealed at the upper opening to a depth of at least 15 feet.

(iii) Bored wells shall be lined with concrete, vitrified clay or equivalent materials.

(iv) The space between the casing or liner and the wall of the well hole shall be sealed with cement grout.

(v) The well casing shall not be used to convey water except under positive pressure. A separate drop pipe shall be used for the suction line.

(vi) When sand or silt is encountered in the water-bearing formation, the well shall either be compacted and gravel packed, or a removable strainer or screen shall be installed.

(vii) The surface of the ground above and around the well shall be compacted and graded to drain surface water away from the well.

(viii) Openings in the casing, cap, or concrete cover for the entrance of pipes, pump or manholes shall be water-tight.

(ix) If a breather is provided, it shall extend above the highest level to which surface water may rise. The breather shall be watertight, and the open end shall be screened and positioned to prevent entry of dust, insects and foreign objects.

(5) Pump and equipment.

(i) Pumps shall be capable of delivering the volume of water required under normal operating pressure within the living unit. Pump capacity shall not exceed the output of the well.

(ii) Pumps and equipment shall be mounted to be free of objectionable noises, vibrations, flooding, pollution, and freezing.

(iii) Suction lines shall terminate below maximum drawdown of the water level in the well.

(iv) Horizontal segments of suction line shall be placed below the frost line in a sealed casing pipe or in at least 4 in. of concrete. The distance from suction line to sources of pollution shall be not less than shown in the table at § 200.926d(f)(3)(iv).

(6) Storage tanks.

(i) A pressure tank having a minimum capacity of 42 gallons shall be provided. However, prepressured tanks and other pressurizing devices are acceptable provided that delivery between pump cycles equals or exceeds that of a 42 gallon tank.

(ii) Tanks shall be equipped with a clean-out plug at the lowest point, and a suitable pressure relief valve.

§ 200.926e Supplemental information for use with the CABO One and Two Family Dwelling Code.

The following shall be used in Table No. R-202, Climatic and Geographic Design Criteria of the CABO One and Two Family Dwelling Code.

(a) Roof live loads.

Roof slope 3 in 12 or less: 20 psf
Roof slope over 3 in 12: 15 psf
Roof used as deck: 40 psf

(b) Roof snow load. The roof snow load shall be in accordance with Section 7 of ANSI A58.1-82

(c) Wind pressures. The minimum Design Wind Pressures (net pressures) set forth below apply to areas designated as experiencing basic wind speeds up to and including 80 mph, as shown in ANSI A58.1-82, Figure 1, Basic Wind Speed Map. These pressures also apply to buildings not over 30 ft. in height above finish grade, assuming exposure C or defined in ANSI A58.1-82.

(1) Minimum design wind pressure criteria.

(i) Buildings (for overturning, racking or sliding); p = 20 psf.

(ii) Chimneys, p = 30 psf.

(iii) Exterior walls, p = 15 psf inward or outward. Local pressure at corners of walls shall be not less than p = 30 psf outward. These local pressures shall not be included with the design pressure when computing overall loads. The pressures shall be applied perpendicularly outward on strips of width equal to 10 percent of the least width of building.

(iv) Partitions, p = 10 psf.

(v) Windows, p = 20 psf inward or outward.

(vi) Roof, p = 20 psf inward or outward.

Roofs with slopes greater than 6 in 12 shall be designed to withstand pressures acting inward normal to the surface, equal to the design wind pressure for exterior walls. Overhanging eaves, cornices, and ridges, 40 psf upward normal to roof surface. These local pressures shall not be

included with the design pressure when computing overall loads. The pressures shall be applied perpendicularly outward on strips of width equal to 10 percent of the least width of building.

Net uplift on horizontal projection of roof shall not be less than 12 psf.

(2) Severe wind design pressures. If the construction is higher than 30 ft., or if it is located in an area experiencing wind speeds greater than 80 mph, higher design wind pressures than shown above are required. Use Section 6 of ANSI A58.1-82 for higher criteria and for determining where wind speeds greater than 80 mph occur.

Pressures are assumed to act horizontally on the gross area of the vertical projection of the structure except as noted for roof design.

(d) Seismic conditions shall be in accordance with Section 9 of ANSI A58.1-82.

(e) Subject to damage from: weathering. A jurisdiction's weathering region shall be as established the map in ASTM C62-83.

(f) Subject to damage from: frost line depth. Exterior wall footings or foundation walls including those of accessory buildings shall extend a minimum of 6 in. below the finished grade and, where applicable, the prevailing frost line.

(g) Subject to damage from: termites. "Yes" shall be used in locations designated as Regions I, II or III. "No" shall be used in loctions designated as Region IV. The map for Termite Infestation Probability in Appendix A of CABO, One and Two Family Dwelling Code shall be used to detrmine the jurisdiction's region.

(h) Subject to damage from: decay. "Yes" shall be used in locations designated as moderate to severe and slight to moderate. "No" shall be used in locations designated as none to slight. The Decay Probability map in Appendix A of CABO, One and Two Family Dwelling Code shall be used to determine the jurisdiction's decay designation.

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